

Amendments to the Claims

Claim 1 (Currently amended) A catalyst comprising at least one metal loaded on a hydrotalcite-based carrier material which has been subject to wet impregnation with at least one metal salt or complex, and anion exchange, and which has the following formula in its uncalcined form



wherein M^{2+} is at least one divalent metal; and M^{3+} is at least one trivalent metal;

A is an n-valent anion

n is 1 or 2,

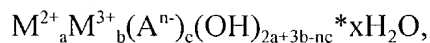
c is 1 or 2,

and a and b are positive numbers, $a > b$;

the catalyst being prepared by:

- a) addition of at least one metal salt or complex to the carrier material, of which the carrier material is (at least partly) in, or transformed to, the hydrotalcite phase during the metal addition step;
- b) followed by washing, and
- c) calcination.

Claim 2 (Currently amended) A (de)hydrogenation catalyst comprising at least one metal selected from the group VIII of the periodic table of elements loaded on a hydrotalcite-based carrier material which has been subject to wet impregnation with at least one metal salt or complex, and anion exchange, and which has the following formula in its uncalcined form



wherein M^{2+} is at least one divalent metal; and M^{3+} is at least one trivalent metal;

A is an n-valent anion

n is 1 or 2,

c is 1 or 2,

and a and b are positive numbers, $a > b$;

the catalyst being prepared by:

- a) addition of at least one metal salt or complex to the carrier material, of which the carrier material is (at least partly) in, or transformed to, the hydrotalcite phase during the metal addition step;

followed by

- b) washing, and
- c) calcination.

Claim 3 (Original) The catalyst of Claim 1 or 2, wherein M^{2+} is at least one divalent metal selected from the group consisting of Mg, Ni, Zn, Fe, Co, Cu, Cr, Mn, Ru, Rh, Pd, Os, Ir, Pt; and M^{3+} is at least one trivalent metal selected from the group consisting of Al, Ga, Ni, Co, Fe, Cr, Mn, V, Ti;

A is OH and/or CO_3 ; CH_3COO ; or other inorganic or organic acid residues

n is 1 or 2.

Claim 4 (Previously presented) The catalyst of claim 1 or 2, wherein M^{2+} is Mg.

Claim 5 (Previously presented) The catalyst of claim 1 or 2, wherein M^{3+} is Al.

Claim 6 (Previously presented) The catalyst of claim 1 or 2, wherein M^{3+} is Ga.

Claim 7 (Previously presented) The catalyst of claim 1 or 2, wherein the at least one metal salt or complex has been added in an aqueous solution.

Claim 8 (Original) The catalyst of claim 7, wherein the at least one metal salt or complex has been added in a neutral aqueous solution.

Claim 9 (Original) The catalyst of claim 7, wherein the at least one metal salt or complex has been added in an acid aqueous solution.

Claim 10 (Original) The catalyst of the claim 9, wherein the pH of the acid aqueous solution is lower than 5, and preferably lower than 4.

Claim 11 (Previously presented) The catalyst of claim 9, wherein the at least one metal salt or complex has been added in an aqueous inorganic acid solution.

Claim 12 (Original) The catalyst of the claim 11, wherein the addition of the at least one metal salt or complex has been performed in an aqueous HCl solution.

Claim 13 (Previously presented) The catalyst of claim 9, wherein the acid aqueous solution is an aqueous solution of an organic acid.

Claim 14 (Original) The catalyst of the claim 13, wherein the organic acid is acetic acid.

Claim 15 (Previously presented) The catalyst of claim 1 or 2, wherein the at least one metal salt or complex has been added in an organic solution.

Claim 16 (Original) The catalyst of claim 15, wherein the addition of the at least one metal salt or complex has been performed in an ethanol solution.

Claim 17 (Cancel)

Claim 18 (Previously presented) The catalyst of claim 1 or 2, wherein the contact time between the metal containing solution and the carrier material has been between 0.01 and 30 hours, preferably between 0.05-5 hours.

Claims 19-24 (Cancel)

Claim 25 (Currently amended) The catalyst of claim 1 or 2, wherein the hydrotalcite based carrier has been further subject to ~~a combination of any of the treatments of~~ (1) preparation by mixing $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ and $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ dissolved in water with a basic aqueous solution containing OH and CO_3 anions, (2) said preparation and drying, (3) said preparation and drying and calcination, or (4) said preparation, drying and calcination followed by suspension, ~~and (5) wet impregnation with the at least one metal salt or complex and anion exchange.~~

Claim 26 (Previously presented) The catalyst of claim 1 or 2, wherein the hydrotalcite based carrier has been calcined at a temperature of 700 to 1200°C, preferably 700-800°C.

Claim 27 (Previously presented) The catalyst of claim 1 or 2, wherein the final catalyst calcination takes place at a temperature of 400 to 1200°C, preferably 560-800°C.

Claim 28 (Previously presented) The catalyst of claim 1 or 2, wherein a binder is admixed.

Claim 29 (Currently amended) The catalyst of claim 2, wherein the hydrotalcite based carrier has been impregnated by at least one metal selected from the group VIII of the ~~periodical~~ periodic table of the elements.

Claim 30 (Previously presented) The catalyst of claim 2, wherein the hydrotalcite based carrier has been impregnated by at least one metal selected from the group IVA of the periodic table of the elements.

Claim 31 (Previously presented) The catalyst of the claim 30, wherein the hydrotalcite based carrier has been impregnated by at least one metal selected from the group VIII, at least one metal selected from the group IVA, and optionally at least one metal selected from the group IA of the periodic table of the elements.

Claim 32 (Previously presented) The catalyst of the claim 29, wherein the hydrotalcite based carrier has been impregnated by at least one salt or complex of Pt as the group VIII of the periodic table of the elements metal.

Claim 33 (Currently amended) The catalyst of claim 30 or 31, wherein the hydrotalcite based carrier has been impregnated by at least one salt complex of Sn from the group IVA of the ~~periodical~~ periodic table of the elements.

Claim 34 (Currently amended) The catalyst of claim 32, wherein the hydrotalcite based carrier has been impregnated by at least one salt complex of Pt as the group VIII and by at least one salt or complex of Sn as the group IVA of the ~~periodical~~ periodic table of the elements metal.

Claim 35 (Original) The catalyst of the claim 34, wherein the hydrotalcite based carrier has been impregnated by a salt or complex of Pt and by a salt or complex of Sn.

Claim 36 (Previously presented) The catalyst of claim 29, 31 or 32, wherein the salt of Pt is $\text{H}_2\text{PtCl}_6 \cdot 6\text{H}_2\text{O}$.

Claim 37 (Previously presented) The catalyst of claim 30, 31 or 32, wherein the salt of Sn is $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$.

Claims 38-43 (Cancelled)

Claim 44 (Previously presented) In a process comprising subjecting a material to a catalytic reaction in the presence of a catalyst, the improvement wherein the catalyst is a catalyst of claim 1 or 2.

Claim 45 (Previously presented) In a process comprising subjecting a material to a dehydrogenation reaction in the presence of a catalyst, the improvement wherein the catalyst is a catalyst of claim 2.

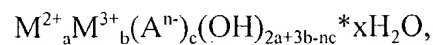
Claim 46 (Previously presented) The process of claim 45, wherein the material is an alkane.

Claim 47 (Previously presented) The process of claim 47, wherein the alkane is a C_{2-4} alkane.

Claim 48 (Previously presented) The process of claim 48, wherein the alkane is propane.

Claim 49 (Previously presented) In a process comprising subjecting an unsaturated hydrocarbon to hydrogenation in the presence of a catalyst, the improvement wherein the catalyst is a catalyst of claim 2.

Claim 50 (New) A process for preparing a catalyst comprising at least one metal loaded on a hydrotalcite-based carrier material which has the following formula in its uncalcined form



wherein M^{2+} is at least one divalent metal; and M^{3+} is at least one trivalent metal;

A is an n-valent anion

n is 1 or 2,

c is 1 or 2,

and a and b are positive numbers, $a > b$; which process comprises:

- a) adding at least one metal salt or complex to the carrier material, of which the carrier material is (at least partly) in, or transformed to, the hydrotalcite phase during the metal addition step;
- b) followed by washing, and
- c) calcination.

Claim 51 (New) The process of claim 50, wherein the metal is at least one metal selected from Group VIII of the periodic table of elements.